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EX PARTE OR LATE FILED

REDACTED – FOR PUBLIC INSPECTION

ORIGINAL

November 10, 2009

Via Hand Delivery

Marlene H. Dortch
Secretary
Federal Communications Commission
The Portals
445 - 12th Street, SW
Washington, DC 20554

FILED/ACCEPTED
NOV 10 2009
Federal Communications Commission

Re: Notice of *Ex Parte* Presentation, GN Docket 09-51

Dear Ms. Dortch:

The following ex parte submission is the redacted (non-confidential) version of the attached filing and is filed pursuant to the Protective Order in GN Docket No. 09-51. A copy of the confidential version of the ex parte submission is being submitted under separate cover. This filing was to be submitted yesterday; however, we were unable to do so due to unexpected attorney availability, and are submitting it today with a request for such waivers as the Commission may deem necessary for acceptance of this filing. Should you wish to discuss the presentations further, please contact me.

Sincerely,

Thomas Cohen
Thomas Cohen

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KELLEY DRYE & WARREN LLP

Marlene H. Dortch
November 10, 2009
Page Two

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*Counsel for Hiawatha Broadband
Communications, Inc.*

Attachment: Hiawatha Broadband Communications, Inc.
Redacted Ex Parte Filing of November 6, 2009

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November 10, 2009

VIA HAND DELIVERY

Marlene H. Dortch
Secretary
Federal Communications Commission
The Portals
445 - 12th Street, SW
Washington, DC 20554

Re: Notice of *Ex Parte* Presentation, GN Docket 09-51

Dear Ms. Dortch:

On November 5, 2009, Gary Evans, Dan Pecarina, and Bob Bartz of Hiawatha Broadband Communications, Inc. (“HBC”), David Russell of Calix, Geoff Daily, and I met with Kevin King, B.J. Neal, and Rohit Dixit of the National Broadband Plan staff. The purpose of the meeting was to discuss three presentations. The first presentation is by Calix, *Perspective on Fiber-to-the-Home* (“FTTH”) – which contains CONFIDENTIAL INFORMATION. It reviews the cost of deploying fiber and concludes that deployments in urban metro areas would cost approximately \$102.1 billion, in urban non-metro areas approximately \$35.5 billion, in rural metro areas approximately \$17.3 billion, and in rural non-metro areas approximately \$41.4 billion – for a total of \$196 billion (excluding the 2% of the households in the least dense areas of the country).

The second presentation by HBC, which builds upon its experience in deploying and operating both FTTH and hybrid fiber coax (“HFC”) networks, is an operational cost

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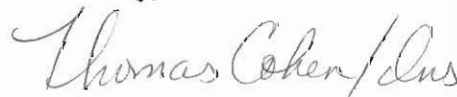
Marlene H. Dortch
November 10, 2009
Page Two

comparison for deploying each (“*HBC Operational Cost Comparison FTTH/HFC*” – HIGHLY CONFIDENTIAL).

Finally, HBC presented *Big Broadband: Rural America Needs It, Too*, which details barriers to the deployment of fiber-to-the-home (“FTTH”) networks in rural areas. More specifically, HBC discussed three major barriers to FTTH deployments in these areas: insufficient access to capital and return on investment, excessive transport (middle-mile) costs, and inadequate training for the workforce deploying and operating FTTH networks. HBC believes that as part of the National Broadband Plan the federal government can deal with each of these barriers by adopting mechanisms set forth in its presentation.

Should you wish to discuss the presentations further, please contact me.

Sincerely,



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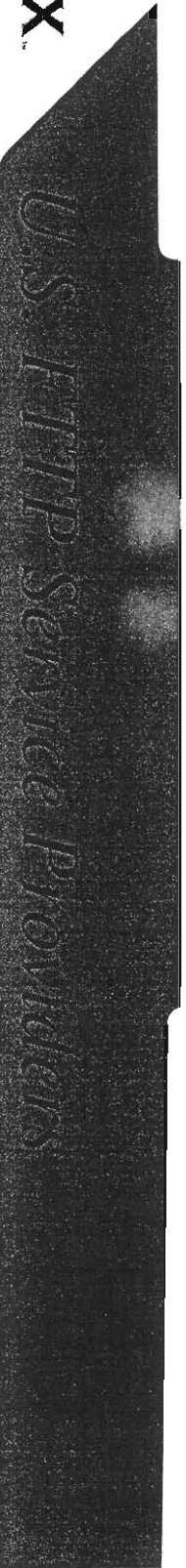
Attachments: *Perspective on Fiber-to-the-Home (Redacted for Public Inspection)*
HBC Operational Cost Comparison FTTH/HFC (Redacted for Public Inspection)
Big Broadband: Rural America Needs It, Too

cc: Kevin King
Byron Neal
Rohit Dixit

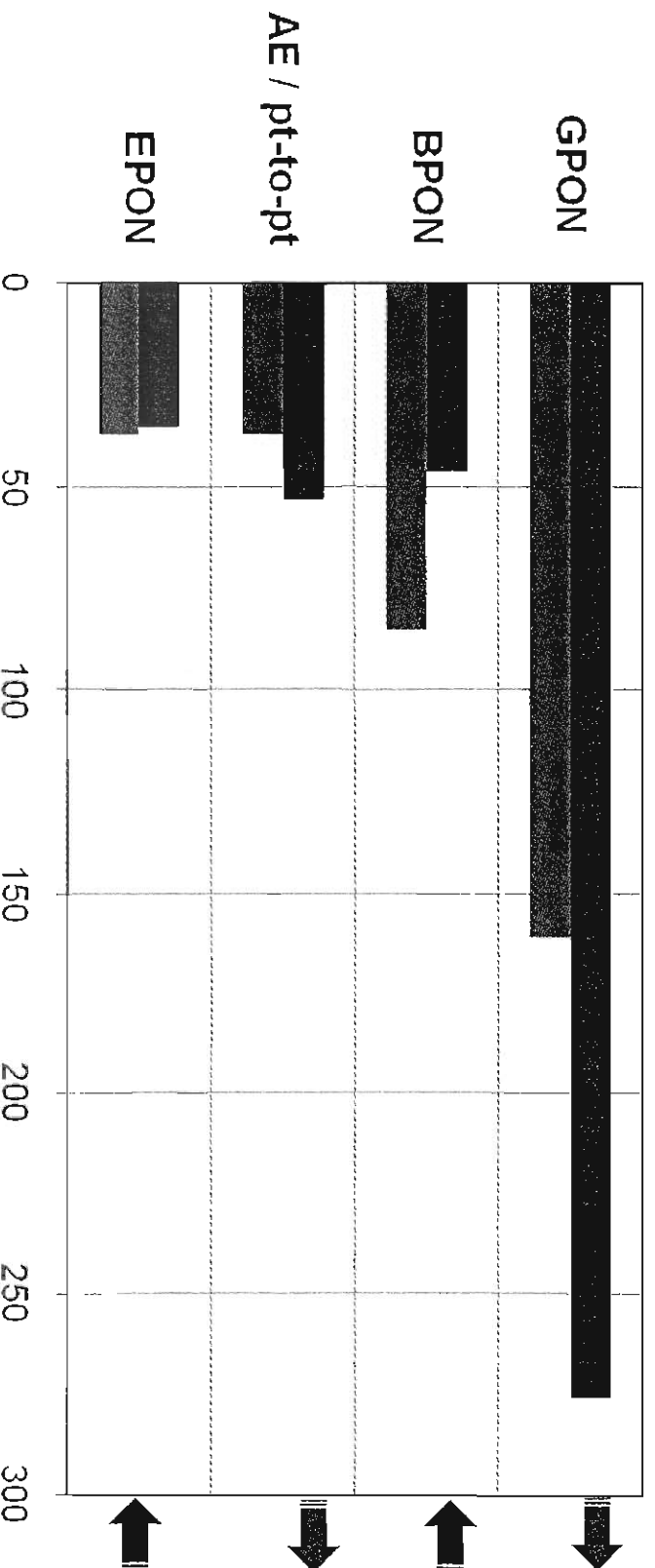
NATIONAL BROADBAND PLAN



Perspective on Fiber-to-the-Home

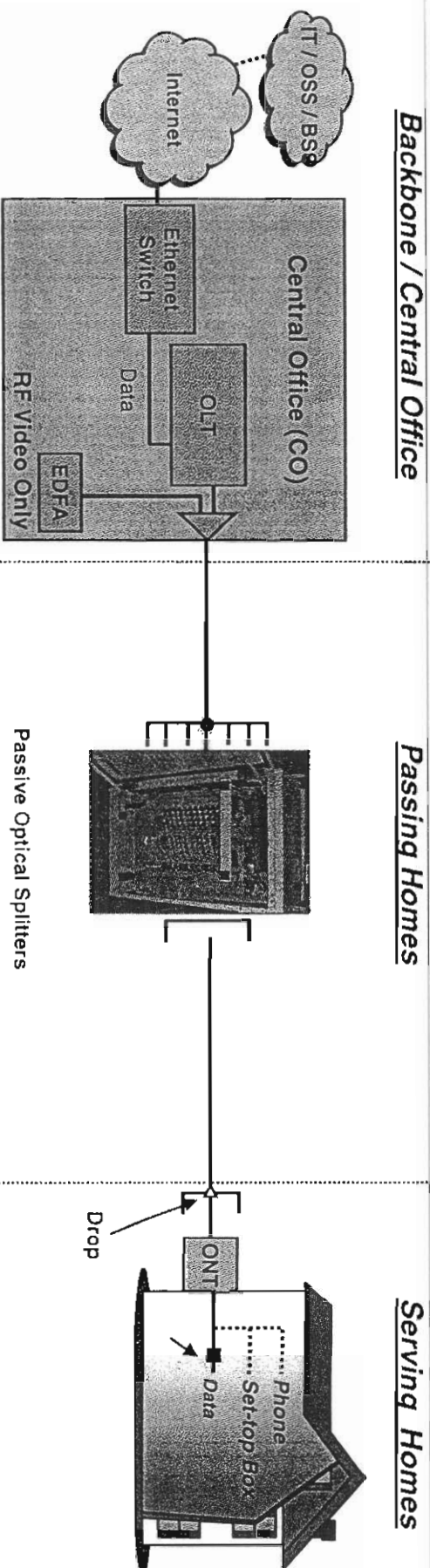


FTTP Technology by Number of Companies



■ Nov. 2009
■ Nov. 2008

Source: Broadband Properties, November 2009



Service Provider	Cost to Pass Per HU	Incremental Cost per HU	HU Density
Verizon	\$700	\$650	>100's/sq. mile
Jaguar (Rural Minnesota)	\$1438	\$693	28.53/sq. mile
Finley Engineering Case Studies (w/Hiawatha BB)	\$1871	\$750	14.33/route mile

Factors that increase the FTTN investment required include: lower household density, greater linear distance between households, fewer homes per CO, higher service uptake, more buried plant

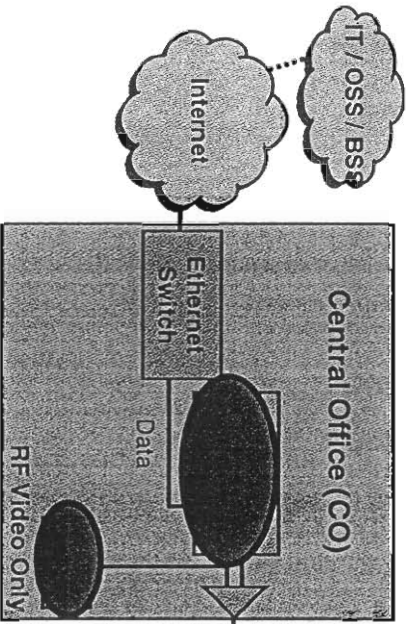
Sources: CSMG, Hiawatha Broadband, Jaguar, Finley Engineering



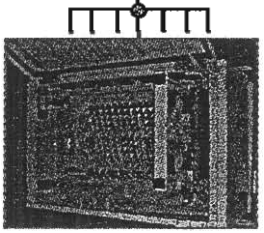
FTTH

Passing Homes

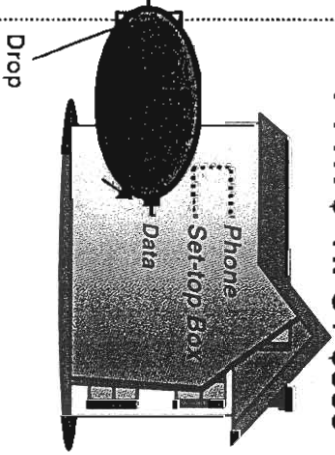
Serving Homes



FTTH \$ = HFC \$

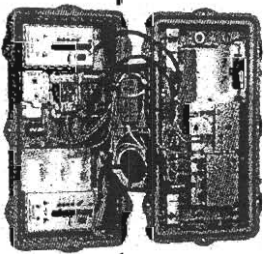
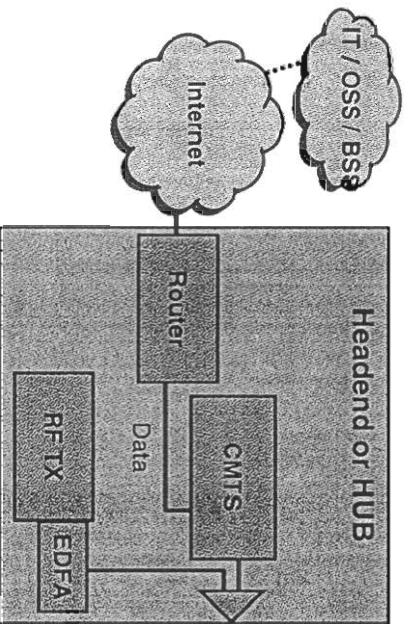


Passive Optical Splitters

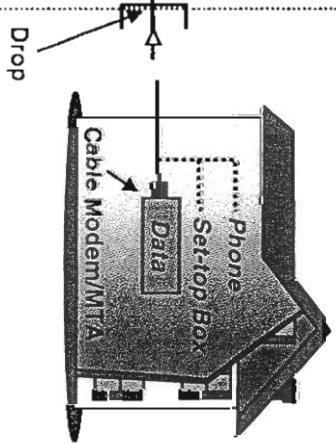


FTTH \$ = HFC + \$350

HFC



Optical Node and Power Supply



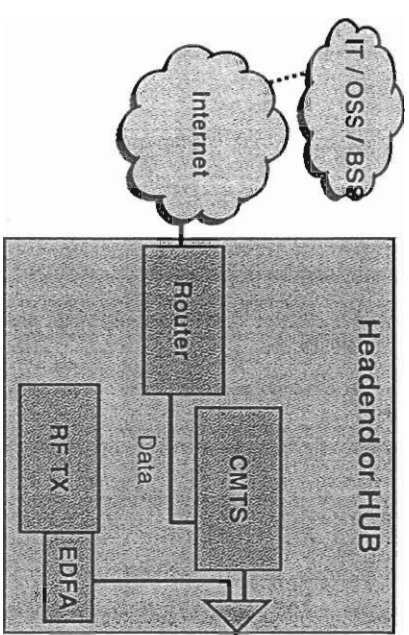
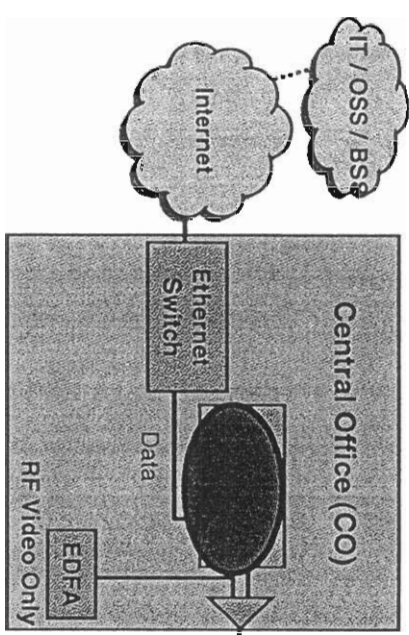
Source: CSMG and Calix analysis



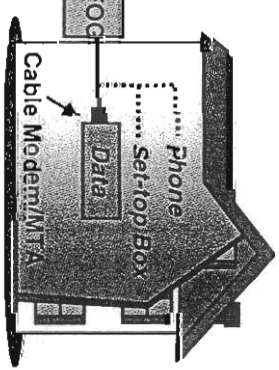
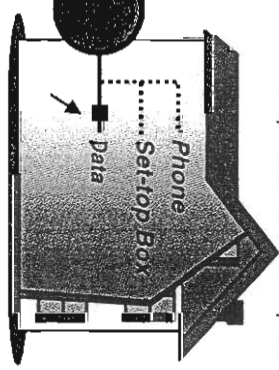
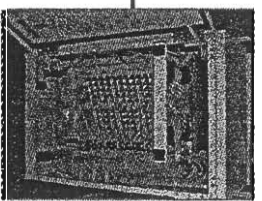
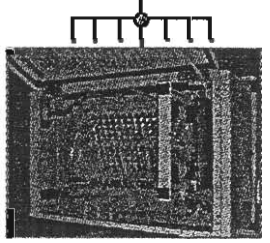
FTTH

Passing Homes

Serving Homes



HFC



FTTH \$ = RFOG \$

FTTH \$ = RFOG + \$175

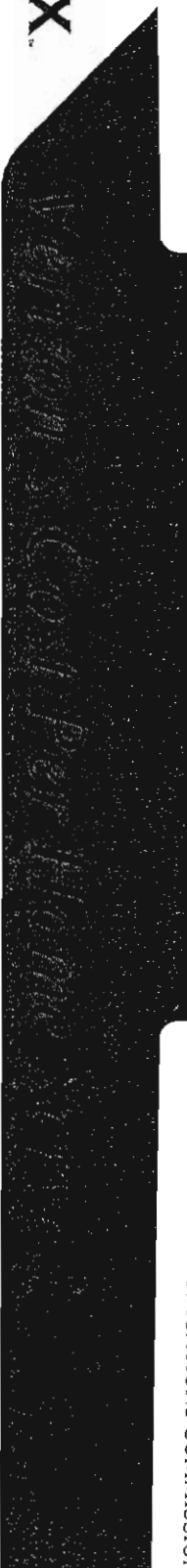
Passive Optical Splitters

Passive Optical Splitters

Drop

Drop

Source: CSMG analysis



Actual cost per home served at a 30% take rate for 1000 homes:

$\$700 \times 1,000 = \$700,000$ to pass 1,000 homes
 $\$650 \times 300 = \$195,000$ to serve 300 homes
 $\$895,000/300 = \$2,983$ per home served

	30% Take Rate	50% Take Rate	100% Take Rate
Cost per Home Passed	\$700	\$700	\$700
Incremental Cost per Home Served	\$650	\$650	\$650
Actual Cost per Home Served	\$2983	\$2050	\$1350



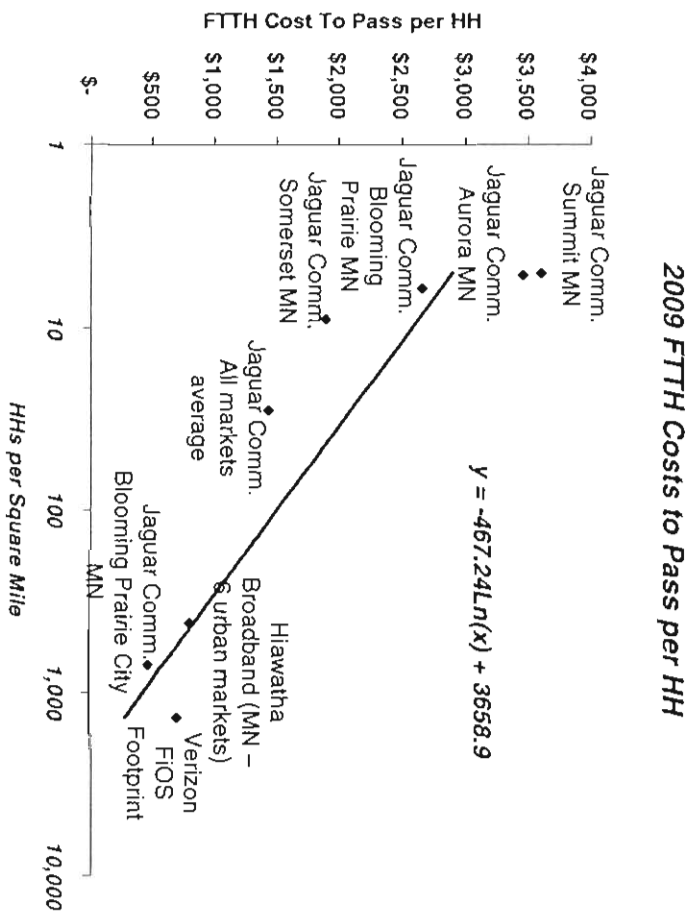
Costs based on average of nine FTTN projects in the midwest. Verizon's incremental cost per home served is \$100 per home less. But Verizon's take rates are much less. Higher costs in rural areas are partly offset by rural operators' higher penetration rates

	30% Take Rate	50% Take Rate	100% Take Rate
Cost per Home Passed	\$1655	\$1655	\$1655
Incremental Cost per Home Served	\$722	\$722	\$722
Actual Cost per Home Served	\$6238	\$4032	\$2377



Within rural towns Hiawatha
Broadband and Jaguar
achieve costs close to those of
Verizon because densities in
towns are equivalent to Verizon's

By serving towns and the
surrounding rural areas, Hiawatha
and Jaguar are able to make
their business case work

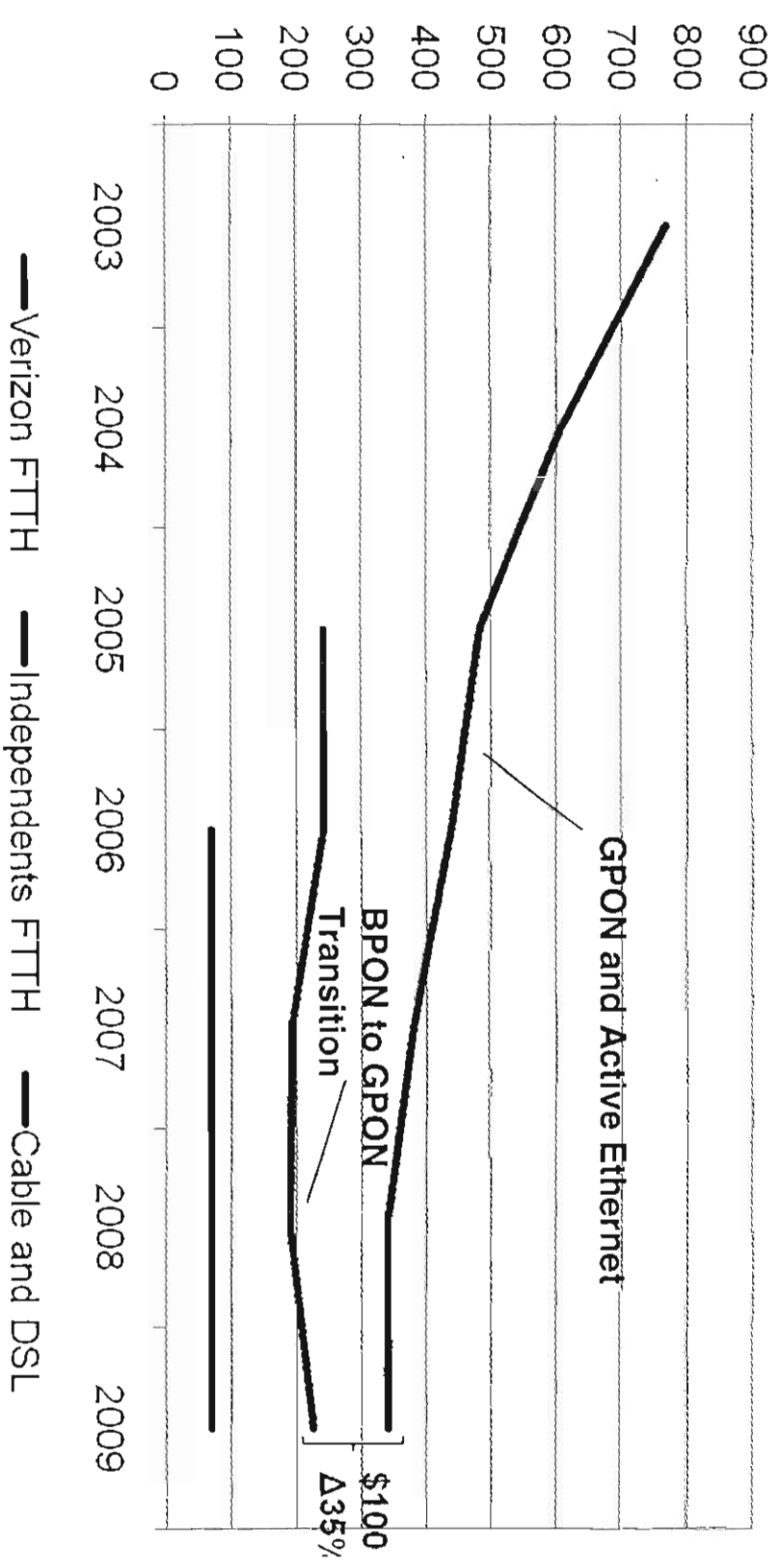


- We observe a 5X difference in FTTH costs per HH passed over the range of HH densities with publicly reported data
- This range of densities represents a wide spectrum of HH densities from rural (5 HHs per sq. mile) to urban (1,375 HHs per sq. mile)

Source: FCC Filings, SNL Kagan, CSMG Analysis



Every doubling of volume equates to a 7% decrease in price. Volume differences between Verizon and the Independents accounts for half (18%) of the price difference



Note: Does not include battery back-up; Cable and DSL are indoor units only



Single Family ONTs		Price
Typical ONT 2 POTS, Multiple Ethernet		[REDACTED]
Only 1 Ethernet Port		[REDACTED]
HPNA		[REDACTED]
2 Additional POTS		[REDACTED]
One Way RF Video		[REDACTED]
Two Way RF		[REDACTED]

*Outdoor temperature rated, does not include power supply or battery backup

MDU per subscriber prices are typically less on a per subscriber basis since the optics is shared

OLT costs typically range from \$100 to \$125 per subscriber depending on services and fill. This is based on 32 way GPON splits.



129 Million housing units on 3.5 million sq. land miles

- ▶ On average there are 34 housing units per square mile
- ▶ Fiber already passes 18 million homes, leaving 111 million HUs

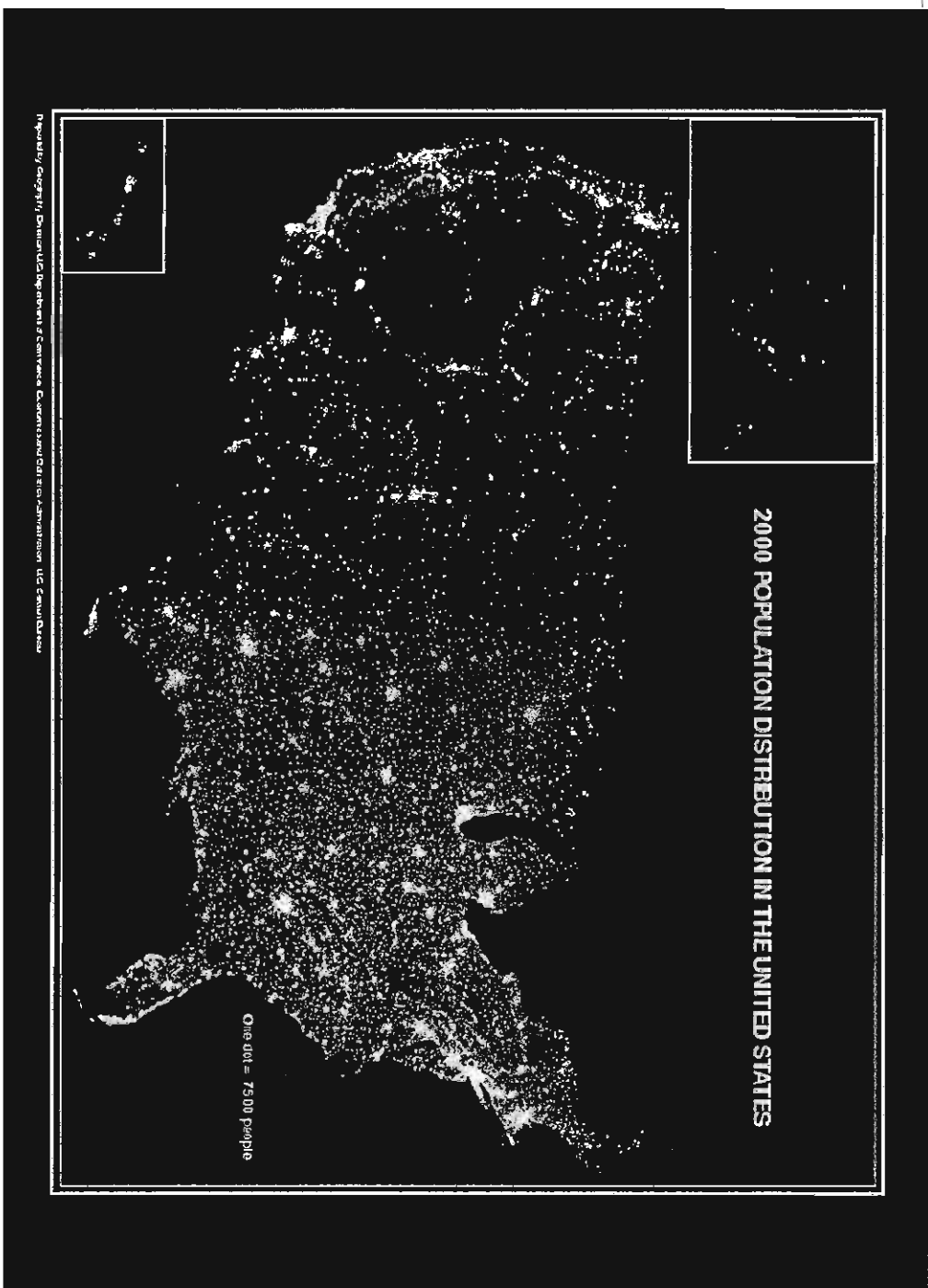
Using the CSMG model to calculate the cost to fiber the U.S.

- ▶ 34 HUs per square mile requires \$2011 per home passed + \$650 per home served
- ▶ $\$2661 \times 111 \text{ M} = \295 Billion

But this assumes housing is distributed evenly and no land is uninhabited



CONFIDENTIAL INFORMATION - SUBJECT TO
PROTECTION ORDER IN GN DOCKET NO. 09-51 BEFORE
THE FEDERAL COMMUNICATIONS COMMISSION



Source: US Census Bureau



Adjusting for largely uninhabited areas

- ▶ 200 of around 3200 counties in the U.S. average less than 1 house per square mile
- ▶ These counties cover 27% of the U.S. land area (968,290 square miles)
- ▶ We estimate these areas have approximately 345 thousand housing units. This is .3% of U.S. housing units

Adjustments for areas that may not make sense to fiber

- ▶ Another 463 counties in the U.S. average between 1 to 5 houses per square mile
- ▶ These counties cover another 23% of the U.S. land area (800,727 square miles)
- ▶ We estimate these areas have approximately 2.25 million housing units. This is 1.7% of U.S. households



- ▶ Eliminating the areas with less than one house per square mile increases U.S. average density to approximately 50 HU per square mile and lowers calculated build out cost to \$275 Billion

@50 HU/sq mile	
Cost per Home Passed	\$1831
Incremental Cost per Home	\$650
Actual Cost per Home Served	\$2481

- ▶ Eliminating the areas between one and five houses per square mile increases U.S. average density to approximately 72 HU per square mile and lowers calculated build out cost to \$252 Billion

@72 HU/sq mile	
Cost per Home Passed	\$1661
Incremental Cost per Home	\$650
Actual Cost per Home Served	\$2311



Example Rural Localities & Household Density

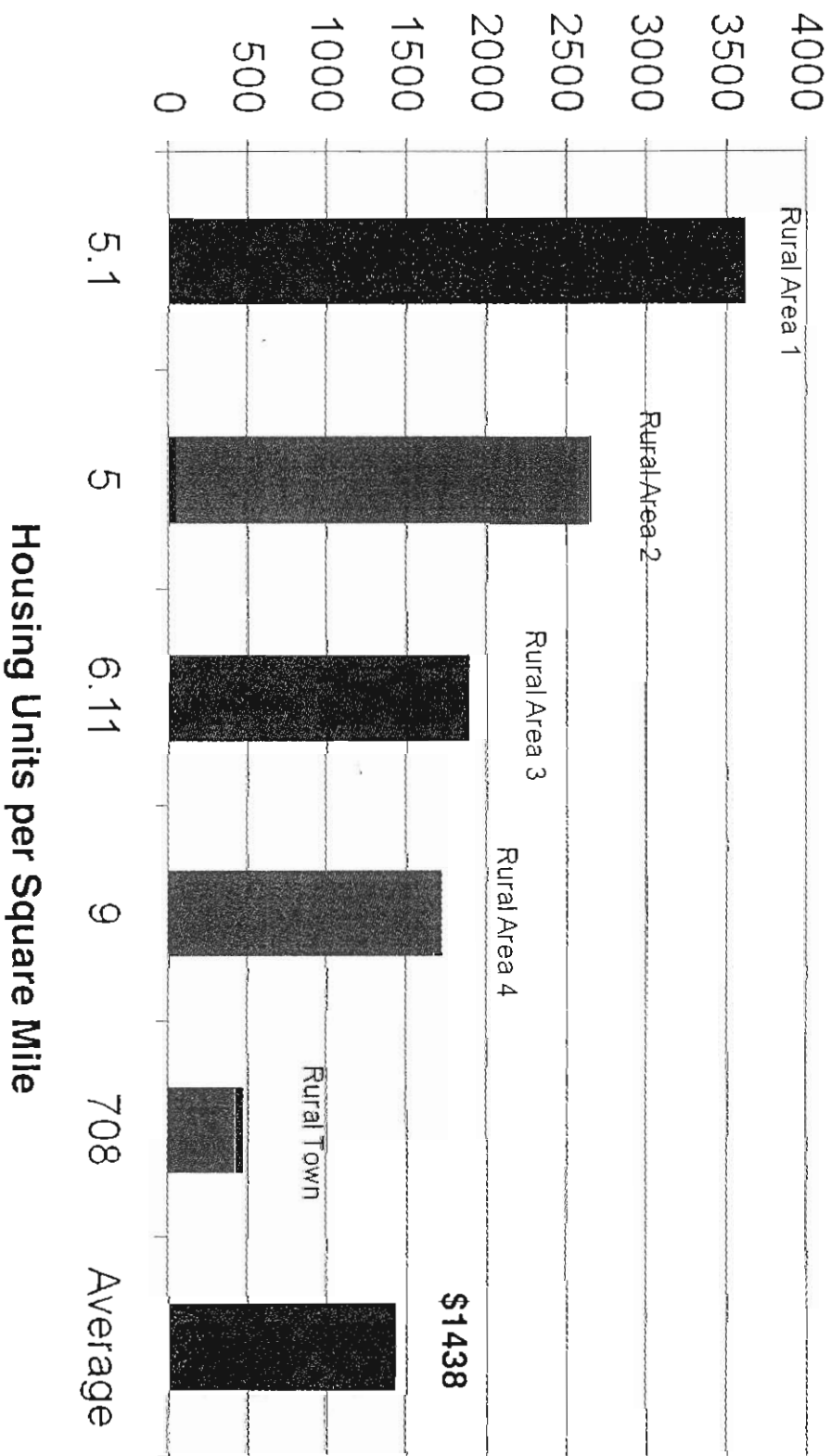
Example Locality		Burwell, NE		Lancaster, NH		Jamestown, TN	
County Name		Burke County, Nebraska		Coos County, New Hampshire		Fentress County, Tennessee	
County HH Density		17.6 HHs per sq. mi.		7.8 HHs per sq. mi.		13.4 HHs per sq. mi.	

- Broad classifications of locality type (rural vs. urban) and density metrics may be poor indicators of the investment required to deploy FTTN to a community, as population and households can exhibit differing levels of clustering

Source: Google Earth, US Census Bureau, CSMG Analysis



Over half of the housing units are located in town, lowering the average cost to service the area by over \$664 per home (28 HU per sq. mile=\$2102)





	Largely Unoccupied <1 HU/sq. m	Very Low Density 1-5 HU	Rural Non- Metro	Rural Metro 2500+	Urban Non-Metro	Urban Metro
Non-Metro Total						
22,543,000	345,000	2,256,000	10,691,000	n/a	9,251,000	n/a
Metro Total						
106,467,000	n/a	n/a	n/a	13,779,000	n/a	92,688,000
Fiber Passed Today	0	0	Included in rural metro	1,000,000	n/a	17,000,000
Future FTTH Homes	0	0	10,691,000	12,779,000	9,251,000	75,688,000
Cost Model	n/a	n/a	Worst Case 6 HU/sq m \$3840	Verizon Costs	Worst Case 6 HU/sq m \$3840	Verizon Costs
Cost	n/a	n/a	41.1 B	17.3 B	35.5 B	102.1 B

Sources: US Census Bureau Data, Render Vanderslice, CSMG cost model



\$196 Billion could complete the build out of fiber to 98% of U.S. housing units

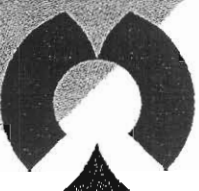
- ▶ Estimate is conservative and assumes limited cost improvements
- ▶ The estimate does not include areas already passed by FTTH
- ▶ \$350 Billion is not a bad estimate for the deployment of two fiber networks to 98% of U.S. homes

Recommendations to help deploy fiber throughout the U.S.

- ▶ Two portions of the U.S. network are successfully being fibered: Verizon urban areas and rural areas controlled by Independent Telcos. Its important to understand what policies and assistance made that possible
- ▶ Federal assistance to help get projects through initial start up phase, enabling private capital to invest in entities with proven EBITA
- ▶ Triple play drives FTTH, costs for video content are destroying business case
- ▶ Establishing more reasonable transport/backhaul pricing in rural areas
- ▶ A rural POP program that enables service providers and communities to gain access to fibers traversing through their communities
- ▶ Public/private partnership to establish an FTTH training program to ensure sufficiently skilled workers for building out the fiber optic infrastructure

Thank you

The information contained in this presentation is
not a commitment, promise or legal obligation to
deliver any material, code or functionality.
The development, release, and timing of any
features or functionality described for our
products remains at our sole discretion.



Calix

ACCESS INNOVATION

Operational Comparison

Fiber-to-the-Home (FTTH) Network vs Hybrid Fiber Coaxial (HFC) Cable Network

There is a cost to maintain and operate any network. An FTTH passive optical network (PON) has many maintenance and operational cost savings due to the technological differences and requirements of each network. While the two network technologies have many common operational tasks, HFC has operational and maintenance elements that FTTH does not have. This table highlights the cost savings in a community converting the network from HFC to FTTH.

Operational Items	Hours/Annually	Annual Cost
Plant Power for 43 power supplies		
CLI drive-outs		
CLI Reporting		
Proof of Performance Testing		
Proof of Performance Paperwork		
Reverse Maintenance		
System balancing and sweeping		
Cable expansion & contraction		
Active element maintenance		
Aerial Drops – squirrel chews		
Total Maintenance		
Total Passings		
Cost Per Passing/Year		

Installing services at a customer premise involves many of the same activities. This chart shows a complete standard installation for a new 3 service customer on each type of network.

CPE Installation Items	HFC CPE Costs	FTTH CPE Costs
Drop Cost		
ONT, UPS & Wiring		
3 Digital TVs (1-W/DVR, 2-SD)		
3 Service Installation		
Materials		
Total CPE Installation		

Per FTE Operations

Operational Revenue per FTE	
Operational Expense per FTE	

Summary of Rural FTTP Network Construction

Number of Passings Per Route Mile	22.58
Total Number of Passings	1545
Total Route Miles for the Project	68.45
Cost Per Route Mile	\$ 23,146.17
Serving Area	Large area surrounding a small town
Type of FTTH Network	GPON Remote Cabinets

Summary Of Construction Costs

Total Construction Cost	\$ 1,584,424.00
Pedestal Costs	\$ [REDACTED]
OSP Construction Costs	\$ [REDACTED]
Splicing Costs	\$ [REDACTED]

Summary Of Construction Costs Per Passing

Total Construction Cost Per Passing	\$ 1,025.51
Pedestal Costs Per Passing	\$ [REDACTED]
OSP Construction Costs Per Passing	\$ [REDACTED]
Splicing Costs Per Passing	\$ [REDACTED]

Notes:

The information shown in this table represents rural FTTH project in southern Minnesota. This project includes a variety of construction challenges including rocky river bluffs. Note that this analysis includes the cost to build the mainline network and does not include any Central Office electronics, customer drops, or customer premise costs.

This project was comprised of a small community with nearly thirty miles of rural extentions. This project has a central office that distrubutes fiber to several PON cabinets. Shorter fiber runs from PON cabinets to each home allows for cost effective fiber networks in rural areas.